

AMENDMENT TO THE SPECIFICATION

On page 2, please amend the paragraph commencing on line 2 as follows:

As is also known, the receiver is coupled to the antenna and includes a low noise amplifier, one or more intermediate frequency stages, a filtering stage, and a data recovery stage. The low noise amplifier receives inbound RF signals via the antenna and amplifies then them. The one or more intermediate frequency stages mix the amplified RF signals with one or more local oscillations to convert the amplified RF signal into baseband signals or intermediate frequency (IF) signals. The filtering stage filters the baseband signals or the IF signals to attenuate unwanted out of band signals to produce filtered signals. The data recovery stage recovers raw data from the filtered signals in accordance with the particular wireless communication standard.

On page 2, please amend the paragraph commencing on line 30 as follows:

As with any integrated circuit (IC), when a radio transceiver is implemented on an integrated circuit, it must include electro-static discharge (ESD) protection circuitry. As is known, ESD protection circuitry includes reverse coupled diodes between inputs of the IC and ground of the IC, between inputs of the IC and a power supply connection of the IC, between outputs of the IC and ground of the IC, and between outputs of the IC and the power supply connection of the IC. The reverse coupled diodes function to route the energy of an ESD event occurring on an input or an output of the IC to ground and/or to the power supply connection of the IC. Further, many ICs include multiple internal ground connections and multiple power supply connections to provide separate grounds and power supplies to circuits of the IC to minimize power supply coupled noise affecting the circuits. For these types of ICs, the ground connections and power supply connections are made external to the IC. However, to provide ESD protection, the grounds and are coupled together via diodes as are the power supply connections.

On page 8, please amend the paragraph commencing on line 27 as follows:

The radio 60 also receives inbound RF signals 88 via the antenna 86, which were transmitted by a base station, an access point, or another wireless communication device. ~~The antenna 86 provides the inbound RF signals 88 receives the RF signal and couples the RF signal~~ to the receiver filter module 71 ~~through Tx/Rx switch module 73~~, which ~~The receiver filter module 71 sends the inbound RF signal 88 to the analog receive section 70 and the analog receive section 70 converts the inbound RF signals 88 into an inbound low IF signal 90 based on a receiver local oscillation 81~~. The inbound RF signals 88 may have a carrier frequency of zero Hertz (i.e., are baseband signals) up to a few MHz.

On page 9, please amend the paragraph commencing on line 4 as follows:

The analog receive section 70 includes an ESD protection circuit 80 that is operably coupled to a receiver analog ground 84. The ESD protection circuit 80 may include one or more reverse coupled diodes to a ~~transmit ground 86 receive ground 84~~, one or more transistors coupled to the ~~transmit ground 86 receive ground 84~~, and/or as disclosed in co-pending patent application entitled ESD PROTECTION CIRCUIT FOR HIGH SPEED SIGNALING INCLUDING T/R SWITCHES, having a serial number of 10/460,570, and a filing date of 6/12/03.

On page 9, please amend the paragraph commencing on line 19 as follows:

As illustrated, the radio 60 is essentially divided into three sections: a digital section (e.g., the digital TX and RX section 64 and the digital portions of the DAC 78 and ADC 66), the analog receive section, which may further include the analog portion of the ADC 66, and the analog transmit section, which may further include the analog portion of the DAC 78. Each of these sections includes a separate ground connection: the digital ground 88, the RX analog ground 84, and the TX analog ground 86. As is further shown, inductors L1 and L2 are coupled between the ground connections 84, 86, and 88 to reduce the adverse affects caused by the parasitic capacitance and other parasitic

components of the ESD protection circuits 80 and 82 on the inbound RF signals 88 and the outbound RF signals 98. The inductors L1 and L2 are off-chip and have an inductance value to be resonant with the parasitic capacitance of the ESD protection circuits 80 and 82 at the radio frequency to provide, at the radio frequency, a low impedance connection between the separate grounds 84, 86, and 88. For instance, the inductance of L1 and L2 may equal $C/(2\pi f)^2$, where C is the parasitic capacitance and f is the radio frequency. Further, the inductors L1 and L2 may be placed within the IC package housing the radio 60 or external to the IC package on a printed circuit board supporting the IC packet.

On page 11, please amend the paragraph commencing on line 25 as follows:

As shown, the analog portion of the ADC 66, the filter/gain module 110, the down-conversion module 112, and the LNA 114 share a common ground (e.g., RX analog ground 84) and a common power supply connection (e.g., RX V_{DD} 106). In this embodiment, the ESD protection circuits 80 and 100-is are coupled to the common ground and power supply connections and to the input of the LNA 114. In this configuration, ESD protection is provided for the inbound RF signals 88. The ground and-of the supply voltage connections of the analog receive section are coupled to the other ground and supply voltages of the RFIC via inductors, which reduces the adverse affects of the ESD protection circuits 80 and 100 on the inbound RF signals 88.

On page 13, please amend the paragraph commencing on line 12 as follows:

Figure 7 is a schematic block diagram of another analog transmit section-70 76 that includes the analog portion of the DAC 78, a filtering/gain module 134, an IF mixing up conversion stage 136, and a power amplifier 138. In operation, the filtering/gain module 134 filters and/or adjusts the gain of the analog outbound low IF signals prior to providing it to the IF up-conversion mixing stage 136. The IF up-conversion mixing stage 136 converts the analog low IF signals into RF signals based on a transmitter local oscillation 83 provided by local oscillation module 74. The power amplifier 138

amplifies the RF signals to produce the outbound RF signals 98, which are filtered by the transmitter filter module 85 prior to transmission by the antenna 86.

On page 14, please amend the paragraph commencing on line 2 as follows:

Figure 8 is a schematic block diagram of another radio frequency integrated circuit 60 that includes a host interface 62, digital receiver and transmitter processing module 64, an analog-to-digital converter 66, an analog radio section 140, a receiver filter 71, a transmitter/receiver switch 73, ~~a local oscillation module 74~~, a digital-to-analog converter 78, a power amplifier 138, ESD protection circuit 82, ESD protection circuit 102, a transmitter filter module 85, and an antenna 86. The antenna 86 may be a single antenna that is shared by the transmit and receive paths as regulated by the Tx/Rx switch 73, or may include separate antennas for the transmit path and receive path. The antenna implementation will depend on the particular standard to which the wireless communication device is compliant.